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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,136	09/30/2003	Kazuyuki Inokuma	10873.1319US01	6407

7590

09/06/2005

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EXAMINER

LUU, THANH X

ART UNIT PAPER NUMBER

2878

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,136

Applicant(s)

INOKUMA ET AL.

Examiner

Thanh X. Luu

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/2004; 05/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tu et al. (U.S. Patent 6,521,881) in view of Denyer (U.S. Patent 5,345,266).

Regarding claims 1-6 and 12-15, Tu et al. disclose (see Fig. 1) a solid state imaging device comprising: an imaging semiconductor chip (16); and an image processing semiconductor chip (12). Tu et al. also disclose (see Fig. 1) the imaging semiconductor chip is stacked on the image processing semiconductor chip, and a connecting bonding wire (22). The image processing chip inherently processes static or dynamic images. Further as understood, the device may be incorporated into any type of equipment including cellular phones, cameras or information terminals as desired.

Tu et al. do not specifically disclose the type of transistors in the chips. Denyer teaches (see claim 6) an imaging semiconductor chip in which all transistors are formed of the same electric conductor (NMOS or PMOS) and having an amplifier ("sensing amplifier").

Thus, it would have been obvious to a person of ordinary skill in the art at the time the

invention was made to provide such an imaging chip configuration in the apparatus of Tu et al. in view of Denyer to simply manufacturing or to obtain a more compact chip. Furthermore, CMOS image processing chips are ubiquitous. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide CMOS image processing chips in the apparatus of Tu et al. in view of Denyer to reduce costs as such CMOS processing of chips is readily available.

Regarding claims 9-11, Tu et al. and Denyer disclose the claimed invention as set forth above. The stacked arrangement makes every input/output terminals of the chips close to each other. Tu et al. further disclose (see col. 2, line 59) that the image processing chip is a digital signal processor (DSP). Tu et al. do not specifically disclose the specifics of the image processing chip. However, it is notoriously well known in the art that DSP chips comprise timing generators (clocks); a gain control amplifier and A/D converters. Timing inputs and outputs would be inherent in such devices. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such an image processing chip in the apparatus of Tu et al. in view of Denyer to digitally process image signals for improved and more reliable performance.

4. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tu et al. in view of Denyer, further in view of Tago (U.S. Patent 6,844,619).

Regarding claims 7 and 8, Tu et al. and Denyer disclose the claimed invention as set forth above. Tu et al. and Denyer do not specifically disclose the use of through electrodes. Tago teaches (see Fig. 5) the use of through electrodes (11) in a stacked

chip arrangement. Tago also recognizes (see col. 5-6) that through electrodes provide more compact and low cost alternative to other mounting techniques. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a through electrode mounting scheme in the apparatus of Tu et al. in view of Denyer as taught.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is 571-272-2441. The examiner can normally be reached on M-F 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thanh X Luu
Primary Examiner
Art Unit 2878